2. Energy-Efficiency Project Typology

LBNL's MERVC guidelines are targeted to end-use energy-efficiency projects. Table 1 provides a more detailed listing of end-use energy-efficiency projects; this table is not an exhaustive list, but is for illustrative purposes only. In many cases, the proposed projects could be targeted to one or more of the building sectors (residential or commercial) as well as the industrial sector. Most of these projects will target one or a few facilities (in contrast to programs that target many facilities). In all cases, energy-efficiency projects reduce the amount of energy needed to provide given levels of services. If this energy is derived from carbon-based fuel combustion, GHG emissions are reduced.

Table 1. Examples of End-Use Efficiency Measures in Buildings and Industry

Space Conditioning Thermal storage Duct sealing and balancing Improved equipment efficiency Improved building design	**Refrigeration** Defrost control Multi-stage compressors Insulation High efficiency refrigeration cases
Water Heating Insulation blankets Heat pump water heaters Flow restricters High efficiency water heaters	**Lighting** High efficiency ballasts and reflector systems Lighting controls and occupancy sensors Daylight dimmers/switches Compact fluorescents Efficient fluorescent lamps High intensity discharge lamps
Building Envelope Insulating glass Low emissivity glass Insulation Solar shading Highly reflective roofs	**Process Improvements** Drying/curing efficiency Economizers in recovery in steam systems Waste heat recovery Boiler and furnace maintenance Air compressor efficiency Repairing leaks and insulating tanks and pipes
Controls Energy management systems	**Ventilation** Improved efficiency Variable air volume Multi-speed or variable-speed motor
Motors Variable speed drives Improved motor rewinding High efficiency motors	**Operations and Maintenance** Optimization of system operation Proper cleaning and repair Proper operation of systems

The kinds of retrofits for improving energy efficiency can also be characterized by the kind of load and schedule for the load before the retrofit, and the effect that the retrofit has on the load and schedule (personal communication from Steve Kromer, Nov. 20, 1998). The load can be either constant, variable, or variable but predictable, and the schedule can either be known (timed on/off schedule) or unknown/variable (e.g., randomly turned on/off, controlled by occupancy sensor temperature, or a time clock but often manually overridden). The retrofit may change the magnitude of the load and/or change it to/from a constant load from/to a variable load. The retrofit may also change the schedule. During the discussion of monitoring and evaluation in Section 3, we will refer to these different types of loads and schedules.